DISCUSSION.

By Sir NAPIER SHAW.

I am glad to support the appeal for observations of the motion of cirrus clouds in the intertropical region and elsewhere made by Professor van Bemmelen in his letter on the antitrades. (Nature, February 9, p. 172.) It is very interesting that the results which he has obtained by direct observation, with only such additional information from dynamics as may be got from a consideration of the general character of the Australian pressure, should coincide so excellently with results which we obtained here from the calculation of the distribution of pressure at various levels, and the assumption that wind flows along the isobars.

There are some details in Professor van Bemmelen's maps which indicate a flow of air across the Equator which I should be disposed to modify in view of the peculiar conditions under which such a transference of air must take place. I hope to give the details of the information that we have compiled about this subject at some future time, and confine myself for the present to saying that the atmosphere seems to be able to use the circulation of air round a strip of doldrum region as a means of providing for currents which flow westward on the south side and eastward on the north side of the Equator in a general slope of pressure from south to north across the Equator. Thus the doldrum region becomes a sort of elongated clockwise "center" for the winds of the monsoon north and south of the Equator. * * *

MEAN VALUES IN METEOROLOGY.[1]

By J. MASCART.

The average value, over a series of years, of the mean temperature of a particular day of the year is termed the "normal mean" for that day. The same term applies to any other meteorological element. It is pointed out that the formation of true "normal means" presents certain difficulties. A curve of daily "normal means" formed for given dates is not smooth, but presents singularities, some dates or groups of dates appearing specially favored. It is a matter for investigation to determine how far, if at all, these are real. The author finds that they arise, at least partly, through forming the "normal mean" for a given date instead of choosing that day in each year on which the earth traverses, as nearly as possible, the same portion of its orbit, which may occur on one of three consecutive dates according to the year. Utilizing 40 years' observations, and forming, on these lines, as a simple illustration, the frequency of occurrence of frost on each day of the year, a much nearer approach to a smooth curve is obtained than by adhering to the same "date" in each year. Normal means utilized in theoretical investigations should be formed on the suggested plan.—*M. A. G.*

[1] Reprinted from Science Abstracts, Jan. 31, 1922, p. 23, § 61.

THE BELGIAN DAILY WEATHER BULLETIN.

By J. JAUMOTTE.

The war caused an interruption to the publishing of weather bulletins in Belgium, owing to the restriction on the telegraph and the scarcity of money to carry on the work. The war had one good effect, however—that of increasing the number of stations, as the importance of meteorology to aviators is evident.

Belgium found itself in a very unfavorable condition, and has had to rely upon the cooperation of the Government radio posts, which may be discontinued as the country gets back to a peace-time basis. The weather report for Belgium was generally sent out from Uccle and relayed by the Eiffel Tower to all European receiving stations.

The weather maps now issued by the Royal Meteorological Institute of Belgium, are of a different type from that of those formerly issued.

These maps are on a Lambert projection, on a scale of $\frac{1}{1000000}$. The base is a relief map with contours for 200, 500, 1,000, 2,000, and 3,000 meters. On such a large scale map it is easy to indicate wind direction and velocity, pressures, temperatures (degrees C.), and state of the sky. Lines of equal barometric tendency are also published on these maps. On the margin of the map for 7 a. m. are small maps showing pressure and winds at the previous three observations at 1 a. m., at 6 p. m., and at 1 p. m. This makes it possible to follow the successive changes with great ease. There is a conversion scale from millimeter to millibar on the margin of the map. The use of millimeter units at one end of each isobar and of millibar at the other is made in the hope that the public will come to accept the more convenient millibar.—*E. E. K.*

OBSERVATIONS OF POLARIZATION AND SOLAR RADIATION ON MONT BLANC.

By A. BOUTARIC.

Observations made on August 1, 2, 4, and 6, 1921, from 7 o'clock to 18:45 o'clock (true solar time), at Mont Blanc, permit the author to make certain generalizations:

(1) The mean values of solar radiation (observations made with an Ångström pyrheliometer) are about the same as those observed by Vallot.

(2) While the Mont Blanc atmosphere is exceptionally clear, the observed polarization is not very great. This did not exceed 0.68 (observations made with a Cornu photopolarimeter) while Cornu, on a plain, observed as high as 0.80. The author believes this disagreement is to be attributed to the diffusion of light by the snow; the snow diffuses the light in all directions and this is added to the radiation from the sky, with a consequent diminution, of polarized light.

(3) The polarization was less intense on August 1 than on the 6th, while the sky was more transparent (as shown by solar radiation intensity), but on the former date there was a layer of highly reflecting clouds over the valley below the station. A similar effect was noted on the morning of the 4th of August.—*C. L. M.*